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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,300	07/24/2000	Neil G. Jacobson	X-651 US	7042

7590 05/28/2003

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EXAMINER
VO, LILIAN

ART UNIT	PAPER NUMBER
2127	2

DATE MAILED: 05/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/626,300	JACOBSON, NEIL G.	
	Examiner	Art Unit	
	Lilian Vo	2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *8-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-14* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. 1. Claims 1 – 7 and 14 are presented for examination. The applicant' attorney has elected claims group I, which include claims 1 – 7, and 14 with traverse.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group I, claims 1 – 7 and 14, which drawn to allocate the resources of one or more programmable logic devices (PLDs) to a plurality functions in a system having one or more PLDs which comprising allocating the subset of PLD resources between the second and third functions in proportion to a ratio of increasing activity levels between the second and third functions, classified in class 709, subclass 100.

Group II, claims 8 – 13, which drawn to allocate the resources of one or more programmable logic devices (PLDs) to a plurality functions in a system having one or more PLDs, which comprising allocating a first portion of total PLD resources to a reserve of PLD resources and a second portion of PLD resources to the plurality of functions, wherein the second portion of PLD resources are allocated between the functions in a selected ratio, and wherein the activity level of a function is considered to be increasing/decreasing if sampled activity levels over a selected period of time are greater/lesser than a selected threshold, classified in class 709, subclass 104.

3. The inventions are distinct, each from the other because of the following reasons:

Inventions I - II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as in a system lacking the allocating a first portion of total PLD resources to a reserve of PLD resources and a second portion of PLD resources to the plurality of functions, wherein the second portion of PLD resources are allocated between the functions in a selected ratio, and wherein the activity level of a function is considered to be increasing/decreasing if sampled activity levels over a selected period of time are greater/lesser than a selected threshold. See MPEP § 806.05(d).

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and the search required for one group is not required for another group, restriction for examination purposes as indicated is proper.

6. During a telephone conversion with the applicant's attorney, Edel Young, on April 14, 2003, a provisional election was made with traverse to prosecute the invention of Group I, claims 1 - 7 and 14. Affirmation of this election must be made by applicant in replying to this Office action.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharrit et al. (US Pat. 5,999,990).

Regarding **claim 1**, Sharrit et al disclose a method for allocating resources of one or more programmable logic devices (PLDs) to a plurality of functions in a system having one or more PLDs on which the functions are implemented (abstract), comprising:

monitoring activity levels of the functions (col. 7, lines 27 – 39, col. 6, line 62 – col. 7, lines 13);

selecting a subset of PLD resources that implement the first function (col. 9, lines 5 – 24, col. 5, lines 28 - 36);

selecting a configuration bitstream for implementing a second function (col. 5, lines 32 – 36, col. 6, lines 7 – 9, col. 7, lines 45 – 53); and

reconfiguring the subset of PLD resources implementing the first function with the configuration bitstream of the second function (abstract, col. 2, lines 35 – 47).

Although Sharrit et al. did not entail the feature in which decrease in activity level is detected for resource reallocation purposes, however, col. 7, lines 27 – 33 have in fact further shown the process of monitoring resource consumption dynamically, which implies both resource decrease and demand as well. "Dynamically modifying resource allocation", which is

part of "continuous system requirement monitoring" for resource reconfiguration pinpoints the subset PLD resource reconfiguration feature as claimed.

Therefore, it is obvious for one of ordinary skill in the art to recognize that the reconfiguration due to the decreasing in resource consumption for which the system reallocates the available resource to other operative function(s), being part of dynamic modifying resource allocation.

Regarding **claim 2**, Sharrit et al disclose the method of claim 1, further comprising periodically sampling the activity levels of the functions (col. 9, lines 54 – 58, col. 14, lines 13 – 15, col. 3, lines 7 - 9).

Claim 14 is rejected on the same ground as stated above.

9. Claim3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharrit et al. (US Pat. 5,999,990) in view of Richter et al (US Pat Application Publication 2003/0046396 A1).

Regarding **claim 3**, Sharrit et al. did not clearly specify the method of claim 2, which further comprising determining whether the activity level of the first function is decreasing after the steps of sampling the activity levels of the functions a selected number of times. Nevertheless, Richter et al. show that the resource utilization level is being re-sampling until the estimated subsystem total resource utilization value corresponds to the same resource utilization state (paragraph 0107, 0134, 0154, 0391, 0414, and 0419). Therefore, it would have been obvious for one or ordinary skill in the art, at the time the invention was made, to incorporate this

feature to Sharrit et al.'s invention so that the resource usage level can be measured for optimization purpose.

Regarding to **claim 5**, Sharrit et al disclose the method of claim 1, wherein the subset of PLD resources implementing the first function is reconfigured with the configuration bitstream of the second function only if the activity level of the second function is increasing (col. 7, lines 1 – 5, and 28 –44). Sharrit et al. did not clearly specify if none of the functions have increasing activity levels, then reconfiguring the subset of PLD resources with a predetermined configuration bitstream and adding the subset of PLD resources to a reserve of PLD resources. Nevertheless, Richter et al. show the resource is recovered as soon as the service session is terminated (freeing up the resource) to it make it available for usage paragraph 0463, 0221). Therefore, it would have been obvious for one of ordinary skill in the art, at the time the invention was made to incorporate this feature to Sharrit et al.'s invention so that the system can be utilized all the available resource.

Regarding **claim 6**, Sharrit et al. disclose if none of the functions have decreasing activity levels, then detecting whether any of the functions have increasing activity levels, and for functions having increasing activity levels, allocating a subset of PLD resources from the reserve of PLD resources to the functions having increasing activity levels and reconfiguring the subset of PLD resources from the reserve of PLD resources with configuration bitstreams that implement the functions having increasing activity levels (col. 7, lines 27 – 39, abstract, col. 2, lines 35 – 47).

Furthermore, these limitations can also be found in Richter et al. where additional resources are dynamically allocated/reallocated and that resource are reconfigured to meet the system change requirement during operation (paragraph 0023, 0257, 0263).

10. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharrit et al. (US Pat. 5,999,990) in view of Richter et al (US Pat Application Publication 2003/0046396 A1), and further in view of Gupta et al. (US Pat Application Publication 2002/0091722 A1).

Regarding **claim 7**, Sharrit et al. did not clearly specify the configuration bitstreams for implementing the functions having increasing activity levels proportionally allocate the subset of PLD resources from the reserve in proportion to a ratio of increasing activity levels. Nevertheless, Gupta et al. disclose that resource can be allocated in a manner that is at least partially dependent on the value of workload weight, which can be in proportional to the value of workload weight for that particular device (paragraph 0156). Therefore, it would have been obvious for one of ordinary skill in the art, at the time the invention was made to incorporate this feature to Sharrit et al. and Richter et al.'s invention to optimize buffer space utilization (paragraph 0155).

Regarding **claim 4**, it is rejected on the same ground as stated above.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is (703) 305-7864.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Lilian Vo
Examiner
Art Unit 2127

lv
April 23, 2002

JOHN FOLLANSBEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100